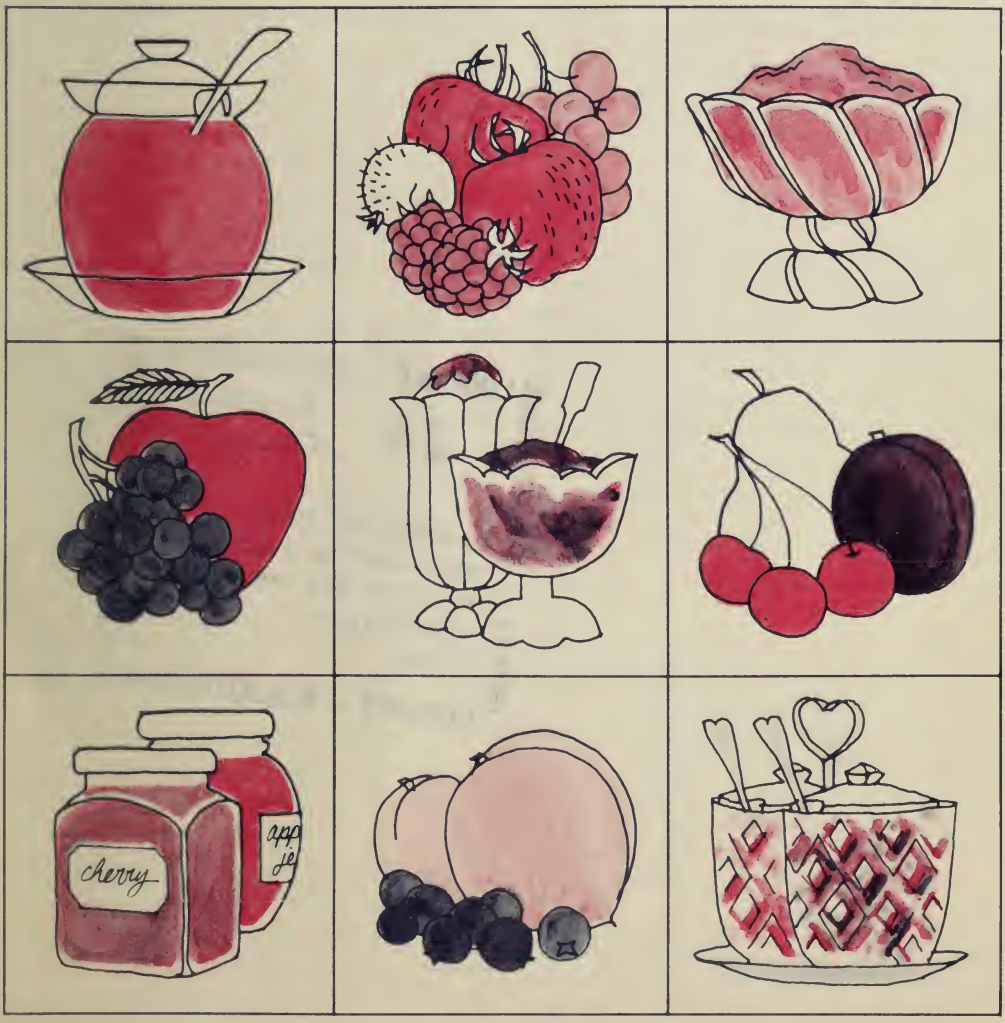
Jams, jellies and other preserves

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Jams, jellies and other preserves

Food Advisory Division

Homemade jams and jellies are a special addition to any meal or snack. They are natural accompaniments to freshly baked bread or tea biscuits and are delicious as toppings for cake or ice cream. Because they are low in nutrients and high in energy, eat them in moderation. Fifteen millilitres of jam contains about 230 kilojoules (55 Calories).

Jams and jellies are only part of a large family of preserved fruit mixtures. Family members are grouped into different categories, depending on how they are prepared.

Jams are made from whole, cut or crushed fruit, boiled with sugar to make a thick spread. The pieces of fruit should be evenly distributed throughout the mixture.

Jellies are made from the strained juice of cooked fruit, which is then boiled with sugar. The jelly should be clear and firm enough to hold its shape when turned out, yet tender enough that it will quiver.

Marmalades are made from citrus fruits alone, or in combination with other pulpy fruit. The peel is sliced or minced and is suspended in the jelly.

Conserves are made from a combination of fruits that are left whole, or cut into large pieces. Nuts and raisins are often added. Conserves have a thinner consistency than jams. They are used as toppings on cake or ice cream.

Preserves are made from whole small fruit or pieces of large fruit, cooked in a syrup until plump, tender and clear.

Fruit butters are made from fruit pulp, cooked until thick and seasoned with spices.

Freezer jams are made from uncooked fruit that is sweetened and combined with commercial pectin. These must be stored in the freezer or refrigerator.

Sugarless jams and jellies are made from fruit sweetened with an artificial sweetener. A gelling agent (such as gelatin or pectin) or a thickening mix is needed. These jams and jellies must be stored in the refrigerator for no longer than 4 to 6 weeks.

INGREDIENTS

Fruit, pectin, acid and sugar are essential ingredients for a successful product.

Fruit

Fruit gives the flavor, color and some of the pectin and acid that are needed. As the fruit matures, flavor and color increase but the amount of pectin and acid decrease. It is best to use a mixture of ripe and underripe sound fruit. Use irregular or scarred fruit when fruit shape is not important.

PREPARING FRUIT Wash fruit thoroughly and drain well. Remove all caps, stems, blossoms and any damaged spots. Pit, core or peel as necessary. Crush, chop or leave fruit whole according to the recipe's instructions. Use a potato masher, fork or food processor to crush fruit.

USING FROZEN FRUIT Many fruits used for making jams and jellies and other preserves are in season at about the same time. You may find it difficult to make as much jam and jelly as you need. Another problem occurs with sugarless jams, made with gelatin or thickening mix. These must be stored in the refrigerator and have a storage life that lasts only 4 to 6 weeks, so they cannot be enjoyed year round.

Solve these problems by freezing the fruit in the summer and making jam or jelly later. Fruits often frozen for this purpose are blueberries, cranberries, red and black currants, gooseberries, rhubarb, saskatoons and strawberries.

Some frozen fruits tend to collapse when thawed, making it difficult to measure accurately. Freeze measured quantities and mark the amount clearly on the outside of the container.

Do not add sugar to this fruit before freezing (All fruits suggested freeze well without sugar).

To use the frozen fruit, thaw until only a few ice crystals remain. Follow the general directions given in this book, using the prefrozen measurements when calculating the amount to use.

Unsweetened, commercially prepared canned or frozen fruits and juices may also be used. Since these products are made from fully ripe fruit, pectin must be added.

Pectin

Pectin is a naturally starchy substance found in fruit that causes jams and jellies to set. It is formed during ripening, but loses its gelling ability if the fruit becomes overripe.

Some fruits contain more than others. Combine fruits low in pectin with those high in pectin (see Table) or add a commercial pectin to the mixture.

Commercial pectin is extracted from citrus fruit peel and sold as a fine powder or liquid. *Do not* interchange these forms in recipes; the concentration in each is different. Also, their use in recipes is different.

Using commercial pectin has several advantages. The final product will have a stronger fruit flavor because fully ripe fruit can be used. There will be a greater jam yield because more sugar is used. Also, the fruit mixture is not boiled as long as in the conventional method.

The recipes in this publication are made without adding pectin. If you decide to add it, you can find excellent recipes for jams and jellies on the packages.

Store pectin in a cool, dry place. Use the powdered type within 2 years and the liquid within 1 year. Refrigerate liquid pectin after opening and use within 1 month.

BUYING GUIDE

FRUIT	QUANTITY*	WEIGHT (grams)	PREPARED VOLUME
Apples	4.45 L basket	2300	2.9 L, chopped
Apricots	1.1 L basket	550	600 mL, chopped
Blueberries	1.1 L basket	700	950 mL, whole OR 650 mL, crushed
Cantaloupe	1	700	400 mL, 2.5 cm cubes
Cherries	4.45 L basket	2700	3.8 L, whole OR 2.8 L, finely chopped
Currants	1.1 L basket	600	650 mL, whole
Gooseberries	1.1 L basket	550	950 mL, whole OR 700 mL, crushed
Grapes	4.45 L basket	1800	1.9 L, whole
Loganberries	1.1 L basket	900	950 mL, whole OR 500 mL, crushed
Peaches	4.45 L basket	2700	2.8 L, chopped
Pears	4.45 L basket	2300	2.6 L, chopped
Plums	4.45 L basket		
Raspberries	1.1 L basket	550	950 mL, whole OR 500 mL, crushed
Rhubarb stalks, no leaves		900	1.2 L, 2.5 cm pieces
Strawberries	1.1 L basket	500	900 mL, whole OR 500 mL, crushed

* 1.1 L basket = 1 quart basket
4.45 L basket = 4 quart basket

Acid

The amount of acid in the fruit mixture is important. If there is not enough, a gel will not form. If there is too much the gel can set too firmly and too fast. The product will lose liquid or "weep" (also known as syneresis).

Fruit varies in acid content. Acid, like pectin, is higher in slightly underripe fruit. Combine low acid fruits with those having a higher content, or add an acid. Lemon juice or citric acid are frequently used.

Amount of pectin and acid in fruit

Many factors affect pectin and acid content, such as growing season, variety and ripeness. However, for convenience, fruits can be put in the rough groupings that follow.

High pectin and high acid	High pectin and low acid
Apples (underripe, sour)	Apples (sweet)
Cherries (sour)	Cherries (sweet)
Crabapples	Quinces
Cranberries	
Currants (red and black)	
Gooseberries	
Grapes	
Grapefruit	
Lemons	
Oranges (sour)	
Plums (Damson and other sour varieties)	

Low pectin and high acid	Low pectin and low acid
Apricots	Blueberries
Raspberries	Elderberries
Rhubarb	Peaches
Strawberries	Pears
	Overripe fruit

Sugar

Sugar, working as a drying agent for pectin, helps form the gel. It also keeps the fruit mixture from spoiling, as long as the sugar concentration is 55% of the total weight of the recipe.

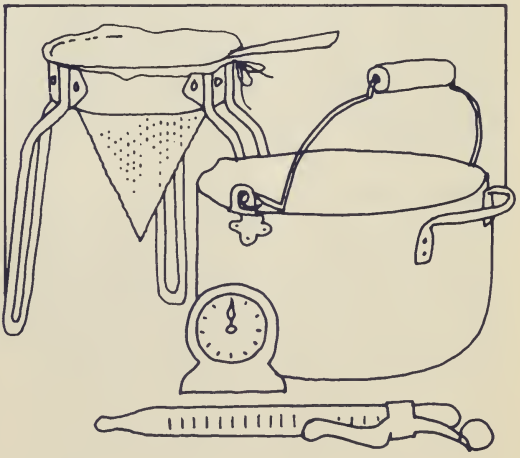
Do not reduce the amount of sugar specified in the recipe. Recipes in this publication were tested to ensure good consistency and keeping qualities. If the sugar is reduced, the products will not set properly and must be stored in the refrigerator or freezer to prevent spoilage.

Most recipes call for white sugar. Honey can replace 25% of the sugar in jam or jelly without harming the color or texture. The honey flavor will intensify during storage if mixed with a mild flavored fruit, and decrease with a strong flavored fruit. Do not use brown sugar or molasses. They are too strong and will overpower the fruit flavor.

EQUIPMENT

PRESERVING KETTLE Use a large, deep pot. It should hold at least 8 to 10 L since the fruit mixture bubbles quite high during cooking. For best results, the kettle must be made of aluminum, stainless steel or enamel. Never use iron, copper or tin kettles as they may discolor the fruit and produce off-flavors.

UTENSILS You will need knives, spoons, measuring equipment, a timer or clock, colander and a jelly bag (for jellies). Other utensils



that can be useful include a wide-mouthed funnel, wire rack, cutting board, candy thermometer, potato masher and a food processor, grinder or blender.

CONTAINERS Store all products except preserves and freezer jams in commercial jars (those you bought other products in) or home canning jars. Preserves must be sealed in home canning jars. Store freezer jams in sturdy plastic containers with tight-fitting lids; glass jars can be used as long as a head space is left for expansion of the jam during freezing.

PREPARATION OF CONTAINERS

Sterilizing jars

Sterilize jars and glass lids by one of the following methods:

OVEN Wash in hot, soapy water. Rinse well. Set jars and glass lids on the oven rack. Heat 10 min at 100°C. Remove them from oven as needed.

BOILING WATER Wash in hot, soapy water. Rinse well. Invert jars in 4 to 5 cm of water. Cover glass lids with water. Bring water for lids and jars to a boil and let boil 15 min. Leave them in hot water until needed.

DISHWASHER Jars and glass lids can be washed, rinsed and sterilized in the dishwasher. Set the dishwasher for the highest water temperature.

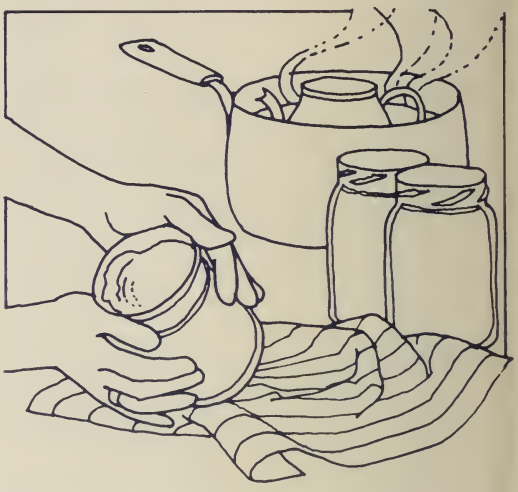
Metal lids must also be sterilized. If home canning jars with metal lids are used, sterilize them according to the manufacturer's instructions. If using commercial jars, boil the lids for 5 min.

Filling jars

To avoid breakage place the hot sterilized jars on a wire rack, wooden board or newspaper when filling. Leave at least a 5 mm headspace. Wipe the mouth of the jar with a clean cloth after filling to remove any food particles.

Sealing commercial jars with paraffin

Allow jars to cool for 30 min before sealing with paraffin. When ready, melt the paraffin in a metal teapot or clean tin can, placed in a saucepan of water over low heat. Never put it over direct heat as it is flammable. Melt wax in small amounts as needed. Pour a thin layer (about 2 mm thick) over the fruit mixture.



Carefully rotate the jar so the wax seals all around the inside rim. Prick any air bubbles. After the first layer has hardened, pour a second layer in the same manner as the first. Two thin layers of paraffin expand and contract more easily than a thick one and make a better seal.

Sealing home canning jars

Depending on the type of jar, use one of the following methods:

SCREW-TOP JAR WITH METAL LID After sterilization, place the lid on the jar and screw the metal band on tightly.

SCREW-TOP JAR WITH GLASS LID Dip the rubber ring in boiling water, place it flat on the jar rim and put the lid on top. Screw the metal band on tightly.

SPRING-TOP JAR Dip the rubber ring in boiling water, place it flat on the jar rim and put the lid on top. Push the long wire bail into the groove on the lid and push down the lower bail.

STORAGE

Let cooked products stand undisturbed until they are completely set. Some may take as long as 48 h.

Store cooked products in a dark, dry, cool place (e.g., in a root cellar, against an outside wall in the basement, or in the kitchen cupboard furthest from any heat source).

Too warm a storage can lead to flavor deterioration, while too cold an area can cause jars to crack. Exposure to light can change the color of the product. If stored properly, most products will keep for 1 year. In this publication, products that have a storage time of less than 1 year are noted in the recipe.

Store freezer jams in the freezer or in the refrigerator. They will keep up to 1 year in the freezer and about 6 weeks in the refrigerator.

Sugarless jams and jellies made with gelatin or jelling mix must be kept in the refrigerator for up to 4 to 6 weeks. Never freeze them as the gel disintegrates.

TESTS FOR DONENESS

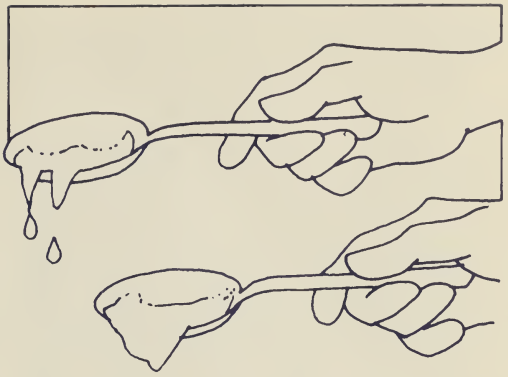
The fruit mixture is cooked to reduce the fruit juices and concentrate the pectin, acid and sugar so a gel will form. Determining when the mixture has been cooked long enough is probably the most difficult step in making these products. The following tests will help you decide when the mixture is ready. Use a combination of tests for better accuracy.

No matter which method or combination of methods you use, remember that the mixture is still cooking while performing the tests. Therefore, do the tests as quickly as possible to prevent overcooking.

When commercial pectin is used, it is not necessary to make these tests. Follow the manufacturer's instructions for exact cooking times.

Spoon or sheet test (for jellies only)

Dip a cold metal spoon into the boiling fruit mixture. Raise the spoon above the steam and turn it so the mixture runs off the side of the spoon and into the kettle. At first it will run off



in a steady stream. When it forms two drops that run together and drip at the same time, the mixture is fully cooked.

Temperature test

Take the temperature of some rapidly boiling water. Place a candy thermometer into the fruit mixture, making sure the bulb is beneath the surface but not touching the kettle bottom. Jams, jellies and marmalades come to the setting point when they have reached a temperature between 2 and 4°C higher than the boiling point of water. Read the thermometer at eye level.

Plate test

Place a small plate in the freezer compartment of your refrigerator before cooking begins, so it will be ready when needed. To perform the test, remove the kettle from the heat and put a spoonful of the fruit mixture on the cold plate. Immediately return the plate to the freezer and wait 2 min. The mixture is done when it forms a mass that moves slowly as the plate is tilted. If the fruit needs more cooking, cook for another 2 min, remove from heat and repeat the test.

MAKING JAM

1. Clean fruit and prepare according to directions given in recipes.
2. Measure prepared fruit accurately, using not more than 3 L for one batch of jam. Cooking too large a quantity at one time may cause overcooking.
3. Precook all fruit except apricots, peaches, pears and strawberries before adding sugar.

Precooking tenderizes the fruit, breaks down the fibers, dissolves the pectin, aids sugar absorption and removes excess moisture.

To precook fruit, put fruit into the preserving kettle. Add water if indicated in recipe, bring mixture to boil and cook uncovered for the required time. Time from the moment the mixture begins to boil vigorously, and stir often to prevent sticking. Follow times closely, as overcooking may destroy the pectin in the fruit or cause the jam to set before the sugar is added. Remove from heat. Add sugar to precooked fruit and stir to dissolve. Proceed to step 4.

For fruits that do not require precooking (e.g., apricots, peaches, pears and strawberries), mix with sugar and stir to dissolve. Allow to stand at least 1 h to develop juices before boiling, otherwise the mixture may become too thick before the pectin has developed and may stick during cooking.

4. Bring fruit mixture to a full rolling boil, boiling rapidly until jam stage is reached. Stir frequently to prevent sticking. Approximate boiling times are given in the recipes. Use these times as a guide only. To determine when jam stage is reached, perform one or more of the TESTS FOR DONENESS.

   Since currants, gooseberries and Damson plums are richer in pectin that other fruits, jams made from them thicken considerably after cooking; care must be taken not to overcook these.

5. When jam stage is reached, immediately remove from the heat. Skim off foam and stir for 5 min to prevent fruit from floating.
6. Fill, seal and store containers.

APRICOT JAM

1.5 L peeled, coarsely chopped apricots (about 2 kg)
875 mL sugar
15 mL lemon juice

Combine ingredients. Allow to stand 1 h. Bring to boil, stirring frequently. Boil to jam stage (about 12 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.4 L.

BLACK CURRANT JAM

1.5 L black currants (about 1.2 kg)
1.25 L water
1625 mL sugar

Combine black currants and water. Bring to boil and cook 15 min. Add sugar, stirring to dissolve. Bring mixture to boil stirring frequently. Boil to jam stage (about 12 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2 L.

BLACK AND RED CURRANT JAM

500 mL black currants (about 400 g)
500 mL red currants (about 400 g)
650 mL water
1 L sugar

Combine currants and water. Bring to boil and cook 15 min. Add sugar, stir to dissolve. Bring to boil stirring frequently. Boil to jam stage (about 6 min). When the jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1 L.

BLACK CURRANT AND RHUBARB JAM

1 L black currants (about 800 g)
1 L rhubarb (about 700 g)
650 mL water
1625 mL sugar

Trim rhubarb, cut in 1 cm pieces. Combine fruits. Add water, bring to boil and cook 10 min. Add sugar, stirring to dissolve. Bring to boil, stirring frequently. Boil to jam stage (about 3½ min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2 L.

BLUEBERRY AND RHUBARB JAM

1 L rhubarb (about 700 g)
2 L blueberries (about 1.4 kg)
250 mL water
1 L sugar

Trim rhubarb, cut in 1 cm pieces. Combine fruits. Add water, bring to boil and cook 10 min. Add sugar, stirring to dissolve. Bring to boil, stirring frequently. Boil to jam stage (about 15 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 3 L.

CHERRY AND RASPBERRY JAM

1.5 L sweet cherries (about 1.1. kg)
50 mL orange juice
25 mL lemon juice
15 mL grated orange rind
1.5 L raspberries (about 1 kg)
1 L sugar
Few drops almond extract

Pit and chop cherries. Add next three ingredients. Bring to boil and cook 10 min, stirring frequently. Add raspberries and sugar. Bring to boil, stirring frequently. Boil to jam stage (about 15 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.75 L.

DAMSON PLUM JAM

2 L Damson plums (about 1.5 kg)
750 mL water
1.5 L sugar

Combine plums and water. Bring to boil and cook 15 min. Add sugar, stirring to dissolve. Bring to boil, stirring frequently. Boil to jam stage (about 20 min). Remove as many pits as possible as they rise to the surface. When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2 L.

FALL FRUIT JAM

1 L chopped, peeled peaches (about 800 g)
1 L chopped peeled pears (about 700 g)
250 mL chopped, peeled apples (about 1 medium apple)
25 mL lemon juice
1.25 L sugar

Combine fruit and cook slowly until tender (about 15 min). Add lemon juice and sugar, stirring to dissolve sugar. Bring to boil, stirring frequently. Boil to jam stage (about 15 min). When the jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.5 L.

GOOSEBERRY JAM

3 L gooseberries (about 2 kg)
750 mL water
1.75 L sugar

Combine gooseberries and water. Bring to boil and cook 15 min. Add sugar stirring to dissolve. Bring to boil, stirring frequently. Boil to jam stage (about 25 min). When jam stage is reached remove heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2 L.

GRAPE JAM

2 L blue grapes (about 1.5 kg)
125 mL sugar to each 250 mL of fruit

Remove skins and reserve. Cook the pulp for 10 min; sieve and discard seeds. Add skins to pulp; measure to determine amount of sugar. Bring skins and pulp to boil, boil until skins are tender (about 10 min). Add sugar. Bring to boil, stirring frequently. Boil to jam stage (about 5 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1 L.

PEACH JAM

1.5 L crushed, peeled peaches (about 1.8 kg)
750 mL sugar
15 mL lemon juice

Combine peaches and sugar, let stand 1 h. Add lemon juice. Bring to boil, stirring frequently. Boil to jam stage (about 20 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.4 L.

PRUNE PLUM JAM

2.5 L chopped, pitted prune plums (about 2 kg)
125 mL water
1.5 L sugar

Combine plums and water. Bring to boil and cook 20 min. Add sugar, stirring to dissolve. Bring to boil, stirring frequently. Boil to jam stage (about 15 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.8 L. May be stored up to 6 months.

RASPBERRY JAM

2 L crushed raspberries (about 2 kg)
1 L sugar

Cook raspberries uncovered 10 min. Add sugar, stirring to dissolve. Bring to boil, stirring frequently. Boil to jam stage (about 12 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2 L.

RASPBERRY AND RED CURRANT JAM

1 L raspberries (about 700 g)
1 L red currants (about 800 g)
1.5 L sugar

Combine fruit and crush. Add sugar; mix well. Let stand 1 h. Bring mixture to boil, stirring frequently. Boil to jam stage (about 10 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2 L.

SASKATOON BERRY JAM

2 L saskatoon berries (about 1.5 kg)
1.25 L sugar
100 mL water
Grated rind and juice of 1 lemon

Mash 1 L of berries and leave 1 L whole. Add sugar and water, stirring to dissolve sugar. Bring to boil, stirring frequently. Add lemon juice and rind. Boil to jam stage (about 18 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.5 L. May be stored up to 6 months.

STRAWBERRY JAM

1 L crushed strawberries (about 1.3 kg)
1 L sugar
75 mL lemon juice

Combine strawberries and sugar, let stand 1 h. Add lemon juice, bring to boil, stirring frequently. Boil to jam stage (about 13 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.1 L.

STRAWBERRY RHUBARB JAM

1 L rhubarb (about 700 g)
1.5 L crushed strawberries (about 3 L)
1.5 L sugar

Trim rhubarb, cut in 1.5 cm pieces. Combine fruits. Bring to boil and cook 10 min, stirring frequently. Add sugar, stirring to dissolve. Boil to jam stage (about 10 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2.5 L.

SUMMER SEASON FRUIT JAM

750 mL chopped sweet cherries (about 700 g)
750 mL crushed gooseberries (about 750 g)
750 mL crushed red currants (about 850 g)
625 mL crushed raspberries (about 650 g)
1.75 L sugar

Combine fruits, bring to boil and cook 15 min. Add sugar, stir to dissolve. Bring mixture to boil. Boil uncovered to jam stage (about 15 min). When jam stage is reached remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2.6 L.

MAKING FREEZER JAM (UNCOOKED)

1. Select fully ripe fruit for its full fruit flavor.
2. Prepare fruit according to directions given in recipes.
3. Measure prepared fruit. Add sugar and stir, or let stand until all sugar is dissolved.
4. Pectin must be added since the fruit is not cooked. If using powdered pectin, add water to it, bring to a rolling boil and boil for 1 min, stirring constantly. Stir into fruit mixture and continue stirring for 3 min. If using liquid pectin, add it directly to fruit mixture and stir constantly for 3 min.
5. Pour mixture into containers, suitable for freezing. Cover and let stand at room temperature until set. This can take up to 24 h.
6. When set, store in the freezer or refrigerator. Jam will keep up to 1 year in the freezer and about 6 weeks in the refrigerator.
7. To serve, thaw frozen jam for a few hours at room temperature. Once thawed it must be stored in the refrigerator.

For further details, check instructions included with the pectin.

MAKING SUGARLESS JAM

1. Select fully ripe fruit for its full fruit flavor.
2. Prepare fruit according to directions given in recipes.
3. Measure prepared fruit.
4. Prepare gelatin as indicated in the recipe and add to the fruit. Combine well. Add artificial sweetener.

5. Fill, seal and store in containers.
6. Store in the refrigerator.

SUGARLESS STRAWBERRY JAM

1 envelope (7 g) unflavored gelatin
500 mL crushed strawberries (about 700 g)
15 mL lemon juice
25 mL liquid artificial sweetener

In a custard cup, soak gelatin in 125 mL crushed strawberries for 5 min. Place cup in gently boiling water to dissolve gelatin (about 5 min). Add to remaining berries and lemon juice; combine. Add sweetener. Pour into jars. Seal. Refrigerate. Makes about 500 mL. May be stored up to 6 weeks in the refrigerator.

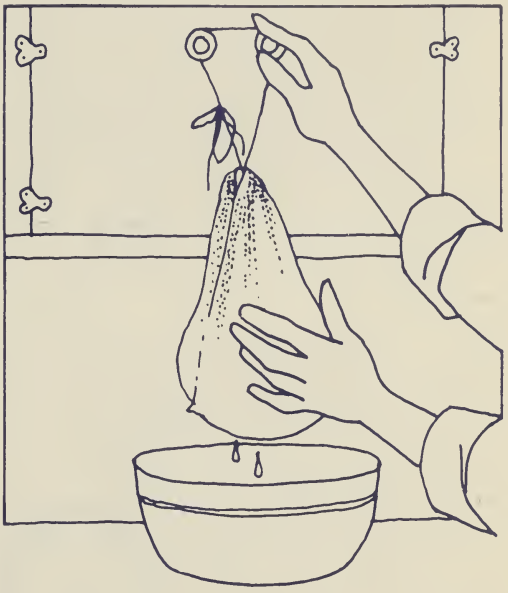
NOTE: Unsweetened, frozen, berries can be used after thawing.

SUGARLESS RASPBERRY JAM Make as sugarless strawberry jam, but use 500 mL crushed raspberries in place of strawberries. May be stored for up to 4 weeks in the refrigerator.

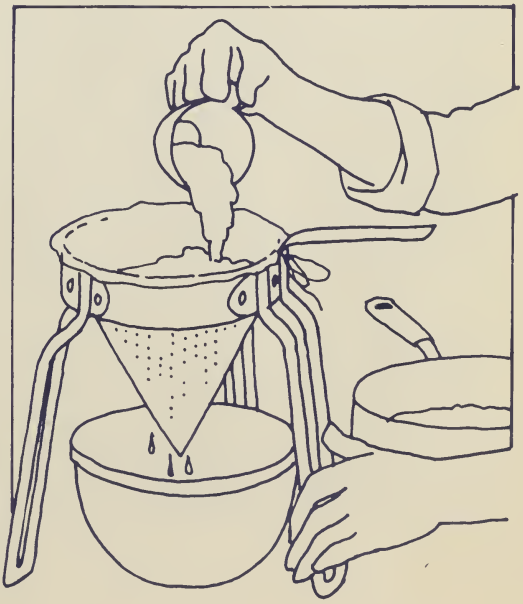
MAKING JELLY

1. Select a mixture of slightly underripe and ripe fruit. Be careful with your selection. Underripe fruit may give a cloudy jelly because it contains more starch than sugar while overripe fruit may not have enough pectin and acid to produce a good gel. Fruits rich in pectin and acid make the best jelly.

   Fruits low in pectin can be combined with those rich in pectin and acid. Avoid fruits low in pectin and acid, because so many ingredients must be added for a gel to form that the fruit flavor is lost.
2. Clean fruits. Remove caps, stems and blossom ends from all fruits except currants. It is not necessary to remove peels, cores or pits since they will be discarded later with the pulp. In fact, much of the necessary pectin for gelling is contained in the fruit skins and cores.
3. Place prepared fruit into the preserving kettle and add water as indicated in the TABLE FOR JELLY. Cover and bring to a boil. Reduce heat and simmer until fruit is soft and mushy, crushing during cooking. The cooking time varies with the fruit. Soft fruits such as raspberries or currants require about 10 min, while firm fruits may need 15 to 30 min.
4. Pour into moistened jelly bag made of several thicknesses of fine cheesecloth or muslin. Suspend the bag over a bowl and pour in the cooked fruit. Allow juice to drain freely until dripping ceases. This may



Two ways to extract juice.



take several hours. Do not squeeze the bag or the jelly will be cloudy.

5. After the extraction, juice can be made into jelly or refrigerated overnight. If you wish to keep it longer, freeze it; just thaw and use when you need it.
6. Measure the juice. Work with no more than 2 L at a time. Cooking too large a quantity may cause overcooking and the jelly may not set. Bring the juice to a boil in an uncovered kettle and let boil 3 minutes. Remove from heat and estimate the pectin content by the alcohol test. Alcohol precipitates the pectin, causing a clot to form.



ALCOHOL TEST FOR PECTIN CONTENT Denatured alcohol is found in drug stores. It is available as ISO-propyl type, 95% ethyl alcohol, wood alcohol, grain alcohol or rubbing alcohol. Measure 5 mL alcohol and 5 mL fruit juice onto a plate. Blend quickly and let stand 30 seconds. DO NOT TASTE THIS MIXTURE; IT IS POISONOUS. If a jelly-like mass or clot is formed, the juice contains enough pectin to gell. If a clot has *not* formed return juice to heat, bring back to rolling boil and test for pectin content every minute.

7. Add sugar slowly to hot juice, stirring to dissolve. Bring mixture to a full rolling boil and boil rapidly to the jelly stage. Stir frequently to prevent scorching.
8. To determine when jelly stage is reached, perform one or more of the TESTS FOR DONENESS.
9. Immediately remove from heat. Let mixture stand for about a minute, and then remove foam with a spoon.
10. Fill, seal and store in containers.

TABLE FOR JELLY

FRUIT	AMOUNT OF COLD WATER
Apple	To completely cover prepared fruit
Chokecherry and apple	To come just below top layer of prepared fruit
Crabapple	To completely cover prepared fruit
Currant, red	125 mL water for each 250 mL prepared fruit
Currant, black	250 mL water for each 250 mL prepared fruit
Gooseberry (green)	200 mL water for each 250 mL prepared fruit
Grape	To come just below top layer of prepared fruit
Plum, sour	To come just below top layer of prepared fruit
Quince and apple, mixed	To completely cover prepared fruit
Quince and grape, mixed	To come just below top layer of prepared fruit
Raspberry and red currant, mixed	50 mL water for each 250 mL prepared fruit

APPLE JELLY

1 L apple juice (about 2.8 kg apples)
Sugar

To extract juice, remove stem and blossom ends from apples. Cut apples in eighths. Add enough water to cover fruit. Bring to boil. Simmer until fruit is soft and mushy, crushing during cooking. Pour into moistened jelly bag and allow to stand until dripping ceases.

Bring juice to boil and boil 3 min. Remove from heat and use alcohol to test for pectin.

DO NOT TASTE THIS MIXTURE. If a clot forms add 1 L sugar to hot juice. If not, do *not* add sugar. Continue boiling, testing frequently for pectin until a clot finally forms. Then add only 750 mL sugar to juice. Return to boil and boil to jelly stage. When jelly stage is reached remove from heat. Stir and skim. Pour into hot sterilized jars. Cool and seal. Makes about 1.1 L.

BLACK CURRANT JELLY

1 L black currant juice (about 1 kg black currants)
Sugar

To extract juice, add 250 mL water for each 250 mL fruit. Bring to boil. Simmer until fruit is soft. Crush fruit during cooking. Pour into moistened jelly bag and allow to stand until dripping ceases.

Bring juice to boil and boil 3 min. Remove from heat and use alcohol to test for pectin. DO NOT TASTE THIS MIXTURE. If a clot forms add 1 L sugar to the hot juice. If not, do *not* add sugar. Continue boiling, testing frequently for pectin until a clot finally forms. Then add only 700 mL sugar to juice. Return to boil and boil to jelly stage (about 8 min). When jelly stage is reached remove from heat. Stir and skim. Pour into hot sterilized jars. Cool and seal. Makes about 1.2 L.

QUINCE AND APPLE JELLY

500 mL quince juice (about 1.5 kg quince)
500 mL apple juice (about 800 g apples)
Sugar

To extract juice, remove stems and blossom ends from quince and apples. Cut fruit in eighths. Add enough water to cover fruit. Bring to boil. Simmer until fruit is soft. Crush fruit during cooking. Pour into moistened jelly bag and allow to stand until dripping ceases.

Bring juice to boil and boil 3 min. Remove from heat and use alcohol to test for pectin. DO NOT TASTE THIS MIXTURE. If a clot forms add 675 mL sugar to the juice. If not, do *not* add sugar. Continue boiling, testing frequently for pectin until a clot finally forms. Then add only 500 mL sugar to juice. Return to boil and boil to jelly stage (about 12 min). When jelly stage is reached remove from heat. Stir and skim. Pour into hot sterilized jars. Cool and seal. Makes about 800 mL.

GRAPE JELLY

1 L grape juice (about 2 kg grapes)
Sugar

To extract juice, remove stems from grapes. Add enough water to come just below top layer of fruit. Bring to boil. Simmer until fruit is soft. Crush fruits during cooking. Pour into moistened jelly bag and allow to stand until dripping ceases.

Bring juice to boil and boil 3 min. Remove from heat and use alcohol to test for pectin. DO NOT TASTE THIS MIXTURE. If a clot forms add 1 L sugar to the juice. If not, do *not* add sugar. Continue boiling, testing frequently for pectin until a clot finally forms. Then add only 750 mL sugar to juice. Return to boil and boil to jelly stage (about 12 min). When jelly stage is reached remove from heat. Stir and skim. Pour into hot sterilized jars. Cool and seal. Makes about 1 L.

QUINCE AND GRAPE JELLY

500 mL quince juice (about 1.5 kg quince)
500 mL grape juice (about 1 kg grapes)
Sugar

To extract juice, remove stems and blossom ends from quince. Cut quince in eighths. Remove stems from grapes. Add enough water to come just below top layer of fruit. Bring to boil. Simmer until fruit is soft. Crush fruit during cooking. Pour into moistened jelly bag and allow to stand until dripping ceases.

Bring juice to boil and boil 3 min. Remove from heat and use alcohol to test for pectin. DO NOT TASTE THIS MIXTURE. If a clot forms add 1 L sugar to juice. If not, do *not* add sugar. Continue boiling, testing frequently for pectin until a clot finally forms. Then add only 750 mL sugar to juice. Return to boil and boil to jelly stage (about 9 min). When jelly stage is reached remove from heat. Stir and skim. Pour into hot sterilized jars. Cool and seal. Makes about 1.2 L.

MAKING JAMS AND JELLIES WITH ADDED PECTIN

If commercial pectin is used, you can choose fruit for its flavor and not for its pectin content. Fully ripe fruit is best.

If using powdered pectin, combine it with fruit or fruit juice and bring to a full rolling boil. Add sugar, bring again to a full rolling boil and boil hard for 1 min, stirring constantly.

If using liquid pectin for jams, first combine the fruit with sugar, bring to a full rolling boil and boil hard for 1 min, stirring constantly. Remove from heat and stir in pectin. When making jellies, first combine fruit juice with sugar and bring mixture to a full boil. Stir in pectin, return to a full rolling boil and boil hard for 1 min, stirring constantly.

Check the manufacturer's instructions for details.

MAKING MARMALADE

1. Remove peel from citrus fruit and cut it into thin strips, 3 cm long and 3 mm wide. Cover peel with water and simmer until tender (about 15 min). Drain.
2. Chop or slice citrus fruit pulp and remove seeds. Prepare other fruit according to directions, and combine with citrus pulp.
3. Add sugar to fruit and stir to dissolve. Bring mixture to a boil and boil rapidly until the TESTS FOR DONENESS determine it is ready. Stir frequently to prevent sticking.
4. Add drained citrus peel to fruit mixture and remove from heat. Stir for 5 min. Skim surface with a spoon to remove foam.
5. Fill, seal and store in containers.

PEAR MARMALADE

2 lemons
Juice from lemons (about 125 mL)
2.5 L sliced, peeled pears (about 2.2 kg)
1.5 L sugar
25 mL finely chopped candied or preserved ginger

Remove rind from lemons and cut in thin 3 cm strips. Squeeze juice from lemons. Place pears in preserving kettle in alternate layers with sugar and lemon juice. Let stand 2 to 3 h. Cover lemon rind with water and simmer until tender (about 15 min). Drain. Add ginger to pear mixture. Bring to a full rolling boil. Boil rapidly to jam stage (about 20 min). When the jam stage is reached remove from heat. Add cooked rind. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.3 L. May be stored up to 6 months.

PLUM MARMALADE

1 orange
125 mL water
2 L chopped, pitted prune plums (about 1.6 kg)
750 mL sugar

Remove rind from orange and cut in thin 3 cm strips. Simmer rind in water until tender (about 15 min). Drain. Chop orange pulp, add to plums and cook for 20 min. Add sugar. Bring to a full rolling boil. Boil rapidly to jam stage (about 10 min). When jam stage is reached remove from heat. Add cooked rind. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.1 L.

RHUBARB GINGER MARMALADE

2 kg rhubarb, cut in 1 to 1.5 cm pieces (about 2 L)
1.5 L sugar
4 medium oranges
25 mL ground ginger

Mix rhubarb and sugar, let stand 4 h or overnight. Remove rind from oranges; cut rind in thin 3 cm strips. Cover rind with water and simmer until tender (about 15 min). Drain. Chop orange pulp. Combine all ingredients except rind. Bring to a full rolling boil. Boil rapidly to jam stage (about 10 min). When the jam stage is reached remove from heat. Add cooked rind. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2 L.

APPLE MARMALADE

1 orange
1 lemon
175 mL water
2 L thinly sliced, peeled tart apples (about 1.1 kg)
1.25 L sugar
300 mL water

Remove rind from orange and lemon and cut in thin 3 cm strips. Simmer rind in 175 mL water until tender (about 15 min). Drain. Chop orange and lemon pulp and add to apples. Combine sugar and 300 mL water. Heat slowly until sugar dissolves. Add fruit. Bring to full rolling boil. Boil rapidly to jam stage (about 10 min). When jam stage is reached remove from heat. Add cooked rind. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.7 L.

MAKING CONSERVES

1. Remove peel from citrus fruit. The rind can be grated and added directly to the other ingredients. If using strips of peel they should be tenderized first. Cut peel into thin strips, 3 cm long and 3 mm wide. Cover with water, simmering until tender (about 15 min). Drain.
2. Prepare other fruit according to directions given. Chop citrus pulp and add to the other fruit.
3. Add sugar to fruit, stirring to dissolve. Bring mixture to a boil and cook until thick, stirring constantly to prevent sticking. For rhubarb, combine with sugar and let stand for about 30 min to allow juices to form before cooking. Fruits like plums require precooking with water to soften the skins (about 20 min).
4. Add drained citrus peel and nuts if desired. Cook mixture for a further 2 min, stirring constantly. Be careful not to overcook the nuts as undesirable flavors could result.
5. When cooking is finished, immediately remove from heat. Stir for 5 min to prevent floating fruit. Skim if desired.
6. Fill, seal and store in containers.

RHUBARB CONSERVE

1 orange
125 mL water
1.8 L rhubarb, cut in 2 cm pieces (about 1 kg)
875 mL sugar
250 mL raisins
50 mL chopped walnuts

Squeeze juice from orange and set aside. Remove rind from pulp and cut in thin 3 cm strips. Simmer rind in water until tender (about 15 min). Drain. Combine juice, rhubarb, sugar and raisins. Let stand 30 min. Bring to boil and cook until almost thick (about 25 min), stirring frequently. Add cooked rind and walnuts; cook until thick (about 5 min more), stirring constantly. Remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1 L.

CRANBERRY CONSERVE

1 package (454 g) cranberries
125 mL coarsely grated orange rind
250 mL chopped orange pulp
500 mL water
1 L sugar
125 mL raisins
50 mL chopped, blanched almonds

Combine first four ingredients. Bring to boil and cook until cranberry skins pop (about 5 min). Add sugar, raisins and almonds. Return to boil and cook until thick (about 7 min), stirring constantly. Remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.3 L.

PEACH CONSERVE

2 oranges
250 mL water
1 bottle (170 mL) maraschino cherries
2 L chopped, peeled peaches (about 2 kg)
1.5 L sugar

Remove rind from oranges and cut in thin 3 cm strips. Simmer rind in water until tender (about 15 min). Drain. Coarsely chop orange pulp. Drain cherries, reserve syrup. Cut cherries in quarters. Add cherries, orange pulp, peaches and sugar to syrup. Bring to boil and cook until thick (about 20 min), stirring frequently. Add rind and cook 2 min more. Remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 2.5 L.

PLUM CONSERVE

1 orange
125 mL water
1.5 L prune plums, pitted, chopped (about 1 kg)
1 L sugar
125 mL raisins

Remove rind from orange and cut in thin 3 cm strips. Simmer rind in water until tender (about 15 min). Drain. Coarsely chop orange pulp. Combine orange pulp, plums, sugar and raisins. Heat to dissolve sugar. Cook 20 min to soften skins of plums. Bring mixture to a full rolling boil and cook until thick (about 5 min), stirring constantly. Add cooked rinds; return to boil. Remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.4 L. May be stored up to 6 months.

CANTALOUPE AND PEACH CONSERVE

1.25 L cantaloupe, peeled, diced (about 1.3 kg)
1.25 L peaches, peeled, diced (about 1.4 kg)
25 mL grated orange rind
200 mL orange juice
1.25 L sugar

Combine cantaloupe, peaches, orange rind and juice. Add sugar. Bring mixture to full rolling boil and cook until thick (about 30 min), stirring frequently. Remove from heat. Stir and skim 5 min. Pour into hot sterilized jars. Cool and seal. Makes about 1.5 L.

MAKING PRESERVES

1. Prepare fruit according to directions given in recipes.
2. Place alternate layers of fruit and sugar in the preserving kettle. Let fruit stand until sugar is absorbed and juices form. Juicy fruits such as strawberries and sweet cherries will need about 1 to 3 h. Rhubarb should stand 24 h.
3. Slowly bring fruit and sugar to a boil. Boil rapidly until fruit is plump, tender and clear and syrup is the desired thickness. Stir frequently to prevent sticking.
4. Seal and store in home canning jars.

CITRON PRESERVES

8.3 L citron, peeled, cut in 1.5 cm cubes (about 6.5 kg)*
30 mL salt
5.5 L water
2.75 L sugar
30 mL lemon rind
250 mL lemon juice
100 mL chopped, candied or preserved ginger

Cover citron with salt and water. Let stand overnight. Drain thoroughly. Add remaining ingredients to citron. Bring slowly to boil, adding water if necessary, to prevent scorching. Cook until syrup is clear and citron is translucent (about 20 min). Pour into hot sterilized jars and seal. Makes about 4 L.

* Citron is a round, green and white-striped melon, about half the size of a watermelon.

SWEET CHERRY PRESERVES

1 orange
1.5 L halved pitted cherries (about 1.2 kg)
1 L sugar
50 mL lemon juice
125 mL raisins

Coarsely grate orange rind. Chop orange pulp. Add to cherries, sugar and lemon juice. Bring to boil. Cook until thick, stirring frequently (about 12 min). Add raisins and orange rind to mixture and cook 5 min more. Remove from heat. Stir and skim 5 min. Pour into hot sterilized jars and seal. Makes about 1.4 L.

PUMPKIN PRESERVES

2.8 L pumpkin, peeled, cut in 1.5 cm cubes (about 2.2 kg)
1.5 L sugar
1 lemon, thinly sliced
125 mL water

Place alternate layers of pumpkin and sugar in kettle. Let stand 30 min. Cut lemon slices in quarters. Add water and simmer until tender (about 15 min). Drain. Cook pumpkin and sugar over low heat until sugar is dissolved (about 8 min). Bring to boil. Boil until fruit is transparent and syrup is thick (about 10 min more). Remove from heat, stir in lemon. Stir and skim 5 min. Pour into hot sterilized jars and seal. Makes about 1.5 L.

RHUBARB GINGER PRESERVES

2 L rhubarb, cut in 2 cm pieces (about 1.2 kg)
1 L sugar
20 mL finely chopped fresh ginger

Place alternate layers rhubarb and sugar in kettle. Let stand 24 h. Strain juice and reserve rhubarb. Combine juice from rhubarb and ginger. Bring to boil, stirring constantly. Cook, without stirring, to 115°C or until syrup, when dropped into cold water, forms a soft ball which flattens on removal from water (about 10 min). Add rhubarb, return mixture to boil. Boil 2 min. Pour into hot sterilized jars and seal. Makes about 1.1 L.

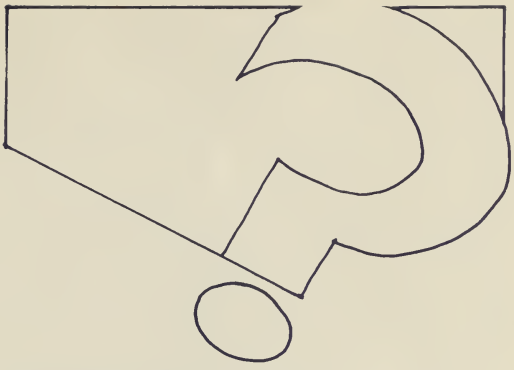
MAKING FRUIT BUTTER

1. Use ripe fruit or fruit pulp that remains after juice is extracted in jelly making.
2. It is not necessary to remove peels, cores or pits since they will be discarded at a later step.
3. Add a little water to prevent sticking. Cook fruit until soft. Hard fruit may need about 20 min of cooking.
4. Press the hot fruit through a sieve, reserving the fruit pulp and juice. Discard skins, cores and pits left in the seive.
5. Measure pulp and juice. For each 250 mL, allow 125 mL of sugar. If fruit is sweet, reduce sugar to 75 mL.
6. Bring fruit mixture to a boil. Stir and cook until thick and transparent. It is ready when it heaps up on a spoon.
7. Add spices during the last 5 min of cooking. If cooked too long, they lose their flavor.
8. Fill, seal and store in containers.

APPLE BUTTER

4 L sliced apples (about 2 kg)
500 mL apple juice
Sugar
5 mL cinnamon
1 mL cloves
1 mL nutmeg
1 mL allspice
Food coloring (optional)

Cook apples and juice until apples are soft. Press through sieve. To each 250 mL pulp add 125 mL sugar (if apples are very sweet, reduce sugar to 75 mL). Add spices. Stir and cook until thick (about 30 to 60 min depending on variety of apples used). Add a few drops red or yellow food coloring. Pour into hot sterilized jars and seal with paraffin. Makes about 1.2 L.



PROBLEM SOLVER

Problem: Runny jam

Causes: — Fruit with a low pectin content. Either the fruit was overripe or was naturally low in pectin.
— Fruit mixture contained too much acid, causing the gel to break up.
— Fruit mixture had too little acid, preventing the pectin from gelling.
— Too much or too little sugar used in proportion to the pectin content.
— Undercooked fruit mixture didn't reach proper jam stage.
— Overcooked fruit mixture broke down the pectin.
— Too large a batch made at one time.

Problem: Soft jelly

Causes: — Fruit with a low pectin content. Either the fruit was overripe or was naturally low in pectin.
— Too much juice used in proportion to sugar.
— Juice not cooked long enough to reach the jelly stage.
— Too large a batch made at one time.

To remake jam or jelly that will not set:

WITHOUT ADDED PECTIN Heat fruit mixture to boiling and boil a few minutes. Use one of the TESTS FOR DONENESS. Continue boiling if necessary. Remove from heat, stir and skim if desired. Pour into hot sterilized containers and seal.

WITH POWDERED PECTIN Measure volume of fruit mixture. For each litre of fruit mixture, measure 50 mL sugar, 50 mL water and 25 mL powdered pectin. Combine pectin

and water and bring to boil, stirring constantly. Add fruit mixture and sugar and mix thoroughly. Bring to full rolling boil and boil hard for 30 seconds. Remove from heat, stir and skim if desired. Pour into hot sterilized containers and seal.

WITH LIQUID PECTIN Measure volume of fruit mixture. For each litre of fruit mixture, measure 175 mL sugar, 25 mL lemon juice and 25 mL liquid pectin. Bring fruit mixture to boil. Add sugar, lemon juice and pectin to the fruit mixture and bring to a full rolling boil, stirring constantly. Boil hard for 1 minute. Remove from heat, stir and skim if desired. Pour into hot sterilized containers and seal.

Problem: Stiff, tough jam or jelly

Causes: — Overcooked fruit mixture. Diluting with fruit juice might make it easier to spread.
— Too much natural pectin in the fruit or too much pectin added.
— Underripe fruit.
— Too little sugar used so the fruit mixture needed longer cooking to reach the gel stage.

Problem: Weeping jelly (syneresis)

Causes: — Too much acid in the fruit juice.
— Not enough pectin in the fruit juice.
— Too thick a paraffin layer. Two thin layers of paraffin are better than a thick one.
— Storage in too warm an area or where temperature fluctuates.

Problem: Cloudy jelly

Causes: — Underripe fruit that has starch in the juice.
— Fruit cooked too long before the juice extracted. Cook fruit only until tender.
— Fruit pulp in the extracted juice. This can be caused by squeezing the jelly bag or by using a bag made from too coarse a material. Use a jelly bag made of several thicknesses of fine cheesecloth or muslin.
— Jelly poured into the containers too slowly.
— Fruit not properly washed.

Problem: Crystals in cooked jams and jellies

Causes: — Too much sugar.
— Sugar added near end of cooking.
— Undissolved sugar sticking to the sides of the kettle. Stir thoroughly during cooking.
— Too much acid or cooking too long.
— Too little acid, causing sugar to crystallize.
— Exposure to air, causing liquid to evaporate near the surface.
— Storage in too warm an area or where temperature fluctuates.
— Tartrate crystals that are naturally present in grape juice. Allow juice to stand 12 to 24 h, then decant before making grape jam or jelly.

Problem: Mold DO NOT USE

Causes: — Contamination before containers sealed. Make sure sanitary procedures are followed and containers are sterilized.
— Too little sugar.
— Seal not airtight.
— Storage in too warm or too damp an area.

Problem: Fermentation DO NOT USE Bubbles moving in the fruit mixture indicate fermentation in progress.

Causes: — Seal not airtight.
— Too little sugar.
— Fruit in poor condition.
— Storage in too warm an area.

Problem: Crystals in uncooked jams and jellies

Causes: — Fruit and sugar mixture not thoroughly stirred.
— Fruit not crushed adequately to extract enough juice to dissolve the sugar.

Problem: Floating fruit

Causes: — Fruit not crushed thoroughly.
— Fruit not cooked long enough.
— Underripe fruit.
— Mixture poured into containers too soon after cooking. Let mixture

cool for 5 min, while stirring, before you pour.

Problem: Hard or shrunken fruit

Causes: — Insufficiently precooked fruit boiled in heavy syrup.
— Fruit precooked in very hard water.

Problem: Discoloration

Causes: — Fruit cooked too long, causing sugar to caramelize.
— Equipment made of iron, copper or tin. The preserving kettle should be aluminum, stainless steel or enamel.
— Storage in too warm an area.
— A faulty seal that allows air to leak in.
— Too long a storage. Color will fade or darken after 1 year.

Problem: Bubbles or air pockets

Causes: — Boiled too hard near end of cooking.
— Jelly poured too slowly into containers, causing air to become trapped.
— Spoilage by yeasts. This is indicated by moving bubbles. DO NOT USE.

KITCHEN METRICS

VOLUME

Use metric measures for metric recipes. Measures are marked in millilitres (mL) and are available in the following sizes:

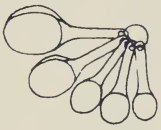
1000 mL = 1L
500 mL
250 mL



250 mL
125 mL
50 mL



25 mL
15 mL
5 mL
2 mL
1 mL



TEMPERATURE

Most commonly used oven temperatures

°C	replaces °F	°C	replaces °F
100	200	190	375
150	300	200	400
160	325	220	425
180	350	230	450

Refrigerator temperature: 4°C replaces 40°F
Freezer temperature: −18°C replaces 0°F

MASS

1 kg (1000 g) is slightly more than 2 pounds
30 g is about 1 ounce

LENGTH

1 cm (10 mm) is slightly less than ½ inch
5 cm is about 2 inches

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